

**Practice Quiz 1**  
(no calculators allowed)

1) If  $z = \frac{2-j}{3+2j}$ , compute the **magnitude** of  $z$ ,  $|z|$

2) If  $z = \frac{1}{1+j}$ , compute the **phase** of  $z$ ,  $\angle z$

3) If  $z = \frac{1+j}{1-j}$ , compute the **phase** of  $z$ ,  $\angle z$

4) If  $z = \frac{2-j}{3+2j}$ , compute the **complex conjugate** of  $z$ ,  $z^*$

5) If  $z = \frac{1}{1+j\omega} e^{j\theta}$ , compute the **complex conjugate** of  $z$ ,  $z^*$

6) If  $z = \frac{1}{1+j\omega} e^{j\theta}$ , compute the **magnitude** of  $z$ ,  $|z|$

7) We can write  $e^{jk\pi}$  as                      a) 1            b)  $(-1)^k$     c) 0

8) We can write  $j$  in polar form as        a)  $e^{j\pi}$         b)  $e^{-j\pi}$       c)  $e^{j\frac{\pi}{2}}$         d)  $e^{-j\frac{\pi}{2}}$

9) We can write -1 in polar form as        a)  $e^{j\pi}$         b)  $e^{-j\pi}$       c)  $e^{j\frac{\pi}{2}}$         d)  $e^{-j\frac{\pi}{2}}$

10) If we made the variable substitution  $\sigma = \lambda - 1$  in the integral  $\int_0^5 x(\lambda - 1)d\lambda$ , what is the new integral?

11) If we made the variable substitution  $\sigma = 1 - \lambda$  in the integral  $\int_{-\infty}^6 x(1 - \lambda)d\lambda$ , what is the new integral?

12) If we made the variable substitution  $\sigma = \frac{\lambda}{2}$  in the integral  $\int_{-\infty}^6 x\left(\frac{\lambda}{2}\right)d\lambda$ , what is the new integral?

13) If we made the variable substitution  $\sigma = -\frac{\lambda}{2}$  in the integral  $\int_{-4}^6 x\left(\frac{-\lambda}{2}\right)d\lambda$ , what is the new integral?

Answers:

1)  $\frac{\sqrt{5}}{\sqrt{13}}$  2)  $-45^\circ$  3)  $+90^\circ$  4)  $z^* = \frac{2+j}{3-2j}$  5)  $z = \frac{1}{1-j\omega} e^{-j\theta}$  6)  $|z| = \frac{1}{\sqrt{1+\omega^2}}$

7)  $b(-1)^k$  8)  $e^{j\frac{\pi}{2}}$  9)  $e^{j\pi}$  or  $e^{-j\pi}$  10)  $\int_{-1}^4 x(\sigma) d\sigma$  11)  $\int_{-5}^{\infty} x(\sigma) d\sigma$  12)  $2 \int_{-\infty}^3 x(\sigma) d\sigma$

13)  $2 \int_{-3}^2 x(\sigma) d\sigma$